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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,864	02/23/2004	Manfred Ueberschar	VOI0211.US	7576

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1792

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10/11/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/783,864	Applicant(s) UEBERSCHAR ET AL.	
	Examiner Katherine A. Bareford	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-36 and 38-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Claims 1-23 and 37 are canceled.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment of September 7, 2007 has been received and entered. With the entry of the amendment, claims 1-23 and 37 are canceled and claims 24-36 and 38-45 are pending for examination.

Claim Rejections - 35 USC § 112

2. The rejection of claims 24-45 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is withdrawn due to the deletion of the phrase "said first curtain and said second curtain maintaining said pressure differential along said first curtain and said second curtain to said material web" from independent claim 24 in the amendment of September 7, 2007.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the

various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 24-34, 36, 38, 39 and 41-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al (US 4230743) in view of Finnicum et al (US 5206057).

Nakamura teaches a method of adding layers to a material web. Figure 4 and column 1, lines 10-15. At least one first layer of a first application medium is applied to the web. Figure 4 and column 7, lines 1-15. At least one second layer of a second application medium is applied to the material web. Figure 4 and column 7, lines 1-15. The application mediums are liquid or pasty. Column 7, lines 60-65, and column 10, lines 30-40. The first application medium (the microcapsule containing medium) can have a solids content of 10-60 wt%. Column 7, lines 60-68. The second application medium (the color developer) can have a solids content of 10-60 wt%. Column 12, lines 30-40. The viscosity of the first medium can be 20 to 200 centipoise (=mPas). Column 7, lines 60-68. The viscosity of the second medium can be 10.8 or 19.5 centipoise (=mPas). Column 15, lines 60-65 and column 16, lines 55-60. The first and second application mediums can be applied to the web in the form of curtains. Figure 4 and column 7, lines

1-15. The apparatus for applying the layers can include a first curtain applicator unit with a first discharge nozzle, whereby the first medium is discharged as a first curtain onto a moving base. Figure 4 and column 7, lines 1-15. A second curtain applicator unit with a second discharge nozzle is provided for providing the second medium as a second curtain onto a moving base. Figure 4 and column 7, lines 1-15. The second applicator is positioned relative to the first applicator such that the first coating is still wet when the second coating is applied. Figure 4 and column 7, lines 1-15.

Claim 25: the water retention capability of the second application medium can be higher than that of the first application medium, as the amount applied of each material can be roughly the same and the second medium can contain an absorptive material, such as clay, not found in the first medium. Column 10, lines 25-40 and column 13, lines 30-40.

Claim 26: the density of the first application medium can be significantly greater than the density of the second application medium, given that in Example 2, for example, the first medium has a significantly higher solids content than the second medium, indicating its greater weight. Column 15, lines 35-65.

Claim 27: the viscosity of the first medium can be higher than that of the second medium, given that the viscosity of the first medium is taught to be 20 to 100 centipoise, while the viscosity of the second medium can be as low as 10.8 centipoise. Column 7, lines 60-68 and column 15, lines 55-65.

Claim 28: the first medium, for example, can be an aqueous solution or dispersion of solid particles. Column 7, lines 60-65 and column 10, lines 1-10 (the solid particles). The second medium can also contain solid particles, such as clay as an aqueous solution or dispersion. Column 12, lines 30-40 and column 10, lines 25-35.

Claim 29: the first medium can be a butadiene-styrene dispersion. Column 9, lines 50-55. The second medium can be a butadiene-styrene dispersion. Column 12, lines 40-45 and column 15, lines 55-65.

Claim 30: the solid particles can be mineral pigments or plastic particles. Column 10, lines 5-20.

Claim 31: the solid particles can be plastic, microcapsules or starch. Column 10, lines 5-20.

Claim 32: the first medium can have solids content of 10-60 wt%. The viscosity can be 20 to 100 mPas. The first medium can be a barrier layer, to the extent that the surface is covered and a protective material is also present. Column 10, lines 1-10.

Claim 33: the first application medium can be a starch solution. Column 10, lines 5-10 (note the presence of starch).

Claim 34: the first application medium can be applied with a curtain coater in an amount of 3.4 l/min (3400 ml/min) for a slit length of 800 mm (0.8 m) at a speed of 300 m/min. Column 17, lines 35-45 (sample 9). This provides an amount of $3400 / (.8 \times 300) = 14 \text{ ml/m}^2$.

Claim 36: the second application medium can be applied with a curtain coater in an amount of 4.7 l/min (4700 ml/min) for a slit length of 800 mm (0.8 m) at a speed of 300 m/min. Column 17, lines 35-45 (sample 9). This provides an amount of $4700 / (.8 \times 300) = 19.58 \text{ ml/m}^2$.

Claim 38: the curtain applicators apply the mediums, respectively, onto the moving base in a substantially finally metered manner. Figure 4 and column 7, lines 1-25.

Claim 41: the curtain heights of the first and second curtains can be about 10 to 20 cm (100 to 200 mm). Column 13, lines 40-45.

Claim 42: the first curtain applicator can discharge the first medium at 3.4 l/min for a width of 800 mm (0.8 m). Column 17, lines 35-45 (sample 9). This gives $3.4 / 0.8 = 4.25 \text{ l/min per meter of width}$. The second curtain applicator can discharge the first medium at 4.7 l/min for a width of 800 mm (0.8 m). Column 17, lines 35-45 (sample 9). This gives $4.7 / 0.8 = 5.875 \text{ l/min per meter of width}$.

Claim 43: the base speed can be 1000 m/min. Column 5, lines 35-40. For example, the speed can be 300 m/min. Column 17, lines 35-45. The base can be paper, such as art paper (which would be a "graphic paper" as things can be drawn on it). Column 13, lines 5-15.

Claim 44: the coating amount can be greater than 4 g/m² for each layer. Column 13, lines 30-40.

Claim 45: the web can be a paper or film web. Column 13, lines 5-15.

Nakamura teaches all the features of these claims except (1) that the viscosity is measured as a Brookfield viscosity determined at 100 rev/min (claim 24), (2) the density (claim 32), (3) the distance between the first and second applicators (claim 24), (4) the exact amount of material (claim 44), (5) the pressure differential in a space partially bounded by the first and second curtains (claim 24) and (6) the vacuum/positive pressure device positioned between the two applicators (claim 39).

However, Finnium teaches that when curtain coating, it is well known to position a pressure differential device that can provide a vacuum or positive pressure in a space partially bounded by the curtain. Figures 1, 3 and 7 and column 3, line 40 through column 4, line 40 and column 5, lines 1-40. The pressure differential space can be such that the space is provided before the curtain in the direction of movement of the web, with the front wall being the curtain. Figures 1 and 3 and column 3, line 40 through column 4, line 40. As well as the space can be provided behind the curtain in the direction of movement of the web, with the back wall of the space being the curtain. Figure 7 and column 5, lines 1-40. The system provides for moving the line of impingement on the curtain on the substrate without disturbing the uniform flow of the curtain. Column 2, lines 65-68. As a result of this system the optimal shape of the curtain can be provided. Column 4, lines 10-20.

It is the Examiner's position that it is well known to measure viscosity using a Brookfield system determined at 100 rev/min. As applicant has not traversed this position from the Oct. 3, 2005 Office Action, it is understood to be admitted prior art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakamura to provide that the viscosity is within the claimed range when measured using the Brookfield system determined at 100 rev/min, because Nakamura teaches a range of 20-100 centipoise viscosity without telling precisely how it is measured, and it is the Examiner's position that the use of a Brookfield system to measure the viscosity is a well known way of measuring viscosity, and its use would provide the desired viscosity of Nakamura when performing the process of Nakamura. It would further have been obvious to provide a density within the claimed range when performing the process of Nakamura, as Nakamura teaches to use an aqueous base and gives a range percentage of solids of defined additive materials, which would provide densities in the claimed range. It would further have been obvious to modify Nakamura to perform routine experimentation to optimize the distance between the first and second applicators, because Nakamura teaches to apply the second coating while the first coating is still wet, and therefore, the second applicator must be close enough to the first applicator for this to occur, based on the materials used and the speed of the coating, and one of ordinary skill in the art would optimize to determine the best distance. It would further have been obvious to modify Nakamura to perform routine experimentation to optimize the exact amount of material to be applied based on the materials to be used, because Nakamura teaches to apply more than 4 g/m² of material for each layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Nakamura

to provide a pressure differential device providing positive pressure or vacuum in a space partially bounded by the first and second curtains of the two applicators as suggested by Finnium with an expectation of desirable coating results by shielding the curtain and providing proper positioning of the curtain, because Nakamura teaches curtain coating with two devices in series, and Finnium teaches the desirability of placing a pressure differential system providing positive pressure or vacuum directed before and after the curtain of a curtain coating device in the direction of movement of the web and partially bounded by the curtain. Because of the two curtains of the system of Nakamura, pressure differential systems as described by Finnium would be provided on both sides of the two curtains, which would suggest providing a single pressure differential system between the two curtains that is bounded by both of the curtains for efficient use of the space between the curtains. This pressure differential system would provide a pressure differential in a space between the first and second curtains relative to an ambient atmospheric pressure.

6. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Finnium as applied to claims 24-34, 36, 38, 39 and 41-45 above, and further in view of Shay (US 5192592).

Nakamura in view of Finnium teaches all the features of this claim except the ink filled microcapsules. Nakamura teaches that microcapsules can be provided in the first coating as part of the protective agent, where the microcapsules are filled with

other than color developer. Column 10, lines 1-10. The microcapsules can be 3-50 microns in size. Column 10, lines 10-20. The solids content of the first coating can be 10-60 wt%. Column 7, lines 60-68. The viscosity of the first coating can be 10-200 centipoise (=mPas). Column 7, lines 60-68.

However, Shay teaches that it is known to provide aqueous coatings of styrene-butadiene latex, clay, starch, calcium carbonate and ink capsules. Column 6, lines 45-50. the solids content of this coating can be about 50 wt%. Column 6, lines 55-60. Shay teaches that the taught coatings can be commonly applied by blade, roll and curtain coating processes. Column 5, lines 50-60.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakamura in view of Finnium to use ink filled microcapsules as suggested by Shay with an expectation of desirable coating results, because Nakamura in view of Finnium teaches that microcapsules filled with other than developer can also be used in the first coating and Shay teaches that it is well known that capsules of ink can be curtain coated.

7. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Finnium as applied to claims 24-34, 36, 38, 39 and 41-45 above, and further in view of Saito et al (US 5136970).

Nakamura in view of Finnium teaches all the features of this claim except the guide elements.

However, Saito teaches that when curtain coating, it is desirable to provide guide elements that guide curtain flow from the slot of the curtain coating nozzle. Figures 1-3 and column 3, lines 5-25.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakamura in view of Finnium to a curtain guide member as suggested by Saito with an expectation of desirable coating results, because Nakamura in view of Finnium teaches a method of curtain coating in series and Saito teaches that it is desirable to use a guide member when curtain coating.

Response to Arguments

8. Applicant's arguments filed September 7, 2007 have been fully considered but they are not persuasive.

As to the 35 USC 103 rejection, applicant argues that neither Nakamura or Finnium or any of the other cited references teaches or suggests the claimed distance between the first and second curtains. Applicant argues that the claimed spacing is selected to allow an immobilization of the pre-coat on the paper web so that the application of the top coat does not impair or damage the pre-coat, and the spacing gives advantages of allowing for immobilization of the pre-coat prior to application of the top coat and allows for the application of the top coat in a pressure controlled environment, with the wetting of the top coat improved, and the use of a positive pressure or vacuum between the coats providing distinct advantages as cited.

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the distance between the two curtains, the Examiner notes that Nakamura and Finnium do not provide a specific teaching as to this distance. However, Nakamura does specifically provide that when using the two curtain application method, the second layer (from the second curtain) should be applied before the first layer (from the first curtain) has dried (see column 7, lines 1-10 and column 14, lines 15-25). Thus it is clearly indicated that the distance between the two curtains should be controlled so that drying of the first ^{applied} curtain will not occur before the second curtain has ^{been} applied, and the distance would be a result effective variable.

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Furthermore, while applicant refers to spacing to allow an immobilization of the pre-coat on the paper web so that application of the top coat does not impair or damage the precoat, which is not specifically taught by Nakamura, Nakamura does desire to apply specific coating material for each layer, each of which has a specific purpose (the microcapsule lower layer, and color developer layer as the top layer, see column 7, lines 1-10), in specific amounts on a dry basis (column 13, lines 25-40) and also notes that the application of the solutions by the curtain coating method means that the coating solutions are coated on the web without adjusting the amount of the coating solutions coated by scraping off after coating so that there is no chance of a loss of microcapsule protecting function by a

protective agent due to a selective scraping off of the protective agent because of a classification effect, etc. (see column 13, lines 45-60), thus noting the clear desire not to damage the coatings during application, which one of ordinary skill in the art would take into account while applying the coatings. Moreover, since optimizing the distance between the two curtains is already suggested, as discussed above, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). As to the benefits of using pressure control between the two curtains, this is clearly suggested by the combination of Nakamura and Finnium as discussed above, with Finnium teaches the desire to provide a pressure differential system that provides positive or vacuum pressure to control the positioning of the curtain. The benefit of a simplified system from using pressure differential between the curtains would be clear, since the space between the curtains can now be used in an efficient manner. Nakamura shows the desire for simplified and efficient systems, at column 14, lines 15-25, when it notes the benefits of coating the second layer on the first layer while the first layer is still wet as allowing for a simplified drying step.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KATHERINE BAREFORD
PRIMARY EXAMINER